REMARKS

Claims 1–20 are pending in the present application.

Reconsideration of the claims is respectfully requested.

35 U.S.C. § 103 (Obviousness)

Claims 1–3, 5–10 and 12–20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,608,360 to *Driscoll* in view of U.S. Patent No. 6,426,683 to *Gu et al.* This rejection is respectfully traversed.

Independent claims 1 and 8 each recite at least one inductance coupled to a port of the SAW resonator, connected and sized to approximately tune out a stray capacitance seen at the port within an equivalent circuit for the SAW resonator at a selected frequency. Similarly, independent claim 15 recites that a stray capacitance seen within an equivalent circuit for the SAW resonator at the port is approximately tuned out at a selected frequency. Such a feature is not found in the cited references, taken alone or in combination.

The portion of *Driscoll* cited in the Office Action as teaching the desirability of filtering out parasitic capacitance states:

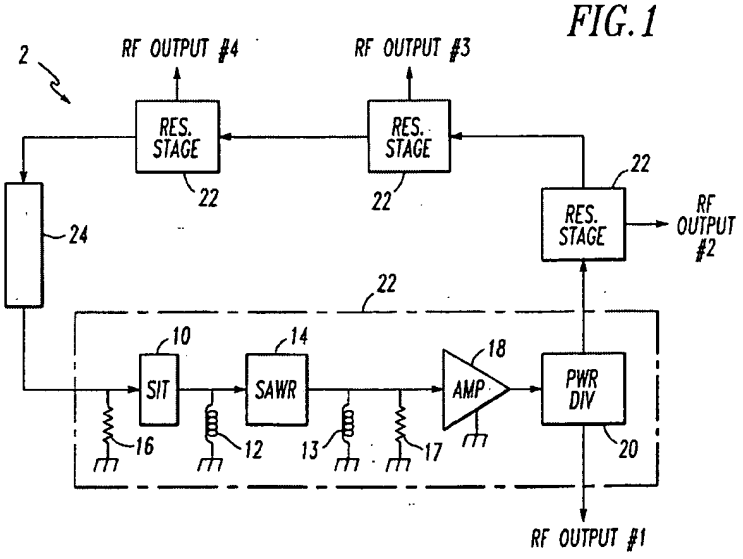
> Unfortunately, applying this technique to higher frequency resonators, such as SAWR, proved difficult using current technology. To minimize the phase noise floor level, each SAWR would require a drive level on the order of 100 mW. Accordingly, combining four SAWR in series would require the use of a sustaining stage amplifier providing a drive level of more than 400 mW, and exhibiting an exceptionally low flicker-of-phase noise. Current technology does not provide amplifiers which meet these requirements. Furthermore, crystal resonators such as BAWR and SAWR have a certain amount of parasitic capacitance. As is well

> known, the lower the operating frequency of the resonator, the easier (i.e., the more coarsely) the parasitic capacitance can be tuned out. At the high frequency operating level of, for example SAWRs, tuning out the parasitic capacitance proves quite difficult since a small degree of mistuning has a much more detrimental effect at high frequency. As a result, cost and manufacturing factors prohibit exact tuning out of the parasitic capacitance of high frequency crystal resonators. Use of variable reactance (i.e., trimmer capacitors) to accomplish exact tuning is not practical due to their vibration sensitivity.

Driscoll, column 3, lines 5–26. In the quoted portion, "this technique" refers to improving quartz crystal oscillator vibration sensitivity, near-carrier noise level and phase noise floor level through use of multiple, series-connected resonators as disclosed in the inventor's prior patent, U.S. Patent No. 4,851,790. *Driscoll*, column 2, line 57 through column 3, line 4. This description does NOT relate to the cited FIGURE 1 within *Driscoll*.

FIGURE 1 of *Driscoll* depicts a surface acoustic wave resonator SAWR 14 with inductors 12 and 13 connected between ports of the SAWR 14 and ground:

FIG. 1



Driscoll, Figure 1. However, *Driscoll* does not teach that inductors 12 and 13 are provided for negating or "tuning out" parasitic or stray capacitances within a SAW resonator, allowing a series resonant circuit to be formed by the SAW resonator and a variable tuning capacitor coupled to a port of the SAW resonator, as recited in the independent claims.

The Office Action asserts–or at least implies–that, while *Driscoll* "does not explicitly describe the inductors as tuning out the parasitic capacitance," such a feature is inherent in the circuit described. Paper No. 20031017, page 3. However, the description of inductors 12 and 13 in *Driscoll* states:

> The inductances [12] and [13] serve to coarsely tune out the SAWR interdigital transducer capacitance (IDT capacitance). Finely tuning out the parasitic capacitances is not required in the oscillator according to the present invention.

Driscoll, column 5, lines 38–42. Thus, taken as a whole, at best *Driscoll* merely teaches partially negating or tuning out parasitic capacitances, and teaches away from negating or tuning out the parasistic capacitance to a degree sufficient to form a resonant circuit with the SAW resonator's equivalent circuit, as recited in the claims. *Driscoll* does not teach that the inductances tune out the stray (parasitic) capacitance seen at the port within an equivalent circuit for the SAW resonator at a selected frequency, so that a variable tuning capacitance coupled to an input or output port of the SAW resonator forms a series resonance circuit with the SAW resonator to selectively alter a resonant frequency of the overall circuit, as recited in the claims.

In addition, the cited references do not provide a reasonable expectation of success in employing a variable tuning capacitance to alter a resonant frequency of a series circuit including the variable tuning capacitance and a SAW resonator, as recited in the claims. The Office Action cites *Gu et al* as teaching connection of a varactor 36/38 or 46/48 for tuning an integrated filter 31 or 41. Paper No. 20031017, page 3. However, without properly negating the parasitic capacitances in the integrated filters 31 and 41, varactors 36/38 or 46/48 cannot form a series circuit with the equivalent circuit of the SAW resonator (since the parasitic capacitances block formation of such a series circuit). It is the resonance of THAT series circuit–the variable tuning capacitance in series with the equivalent circuit of the SAW resonator once the parasitic capacitance is tuned out, NOT the variable tuning capacitance in series with the SAW resonator WITH the parasitic capacitance–that has a resonant frequency altered, as the invention is recited in the claims.

Both *Driscoll* and *Gu et al* are silent as to tuning out parasitic capacitances within a SAW resonator in order to permit formation of a series resonant circuit by a SAW resonator and an external (adjustable) capacitance.

Therefore, the rejection of claims 1–3, 5–10 and 12–20 under 35 U.S.C. § 103 has been overcome.

SUMMARY

If any issues arise, or if the Examiner has any suggestions for expediting allowance of this Application, the Applicant respectfully invites the Examiner to contact the undersigned at the telephone number indicated below or at ***dvenglarik@davismunck.com***.

The Commissioner is hereby authorized to charge any additional fees connected with this communication or credit any overpayment to Deposit Account No. 50-0208.

Respectfully submitted,

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